

REMARKS

The amendments to Claim 1 seeks to narrow the scope of the protection sought; support for the molten polyurethane is found in the description of the working examples in page 7, lines 15 et seq.

The invention is directed to a method for making bloom-free thermoplastic polyurethane (TPU). The method entails blending into TPU an effective amount of a chain terminator that as presently amended is selected from among monofunctional alkylene alcohols having at least 14 carbon atoms and mono-isocyanates. Claims 1, 3-8 and 12 stand rejected under 35 U.S.C. 102(b) as being anticipated by Cook (U.S. patent 4,146,699) or Heiss (Re. 30,721).

Cook disclosed modifying TPU so as to reduce its molecular weight and/or reduce gel fractions by treating it with certain amines. As amended, monoamines are excluded from the scope of the chain terminators entailed in the presently claimed method. The rejection over Cook is believed addressed and overcome by the amendment.

Heiss disclosed that TPU are rendered color-stable upon the addition of oxazolidone thereto. As amended, monoamines are excluded from the scope of the chain terminators entailed in the presently claimed method. The rejection over Heiss is believed addressed and overcome by the amendment. Claims 1-12 stand rejected under 35 U.S.C. 103(a) said to be unpatentable over JP 71031804 (Toyo).

Toyo disclosed preparing polyurethane and resolving it in a solvent; the solution is spun into fibers. Adding higher saturated aliphatic alcohol to the solution to improve stability of the fibers against light and combustion gas is also disclosed. As amended, the claimed method requires the polyurethane to be in molten state. There is nothing in Toyo to describe or suggest the inventive method. The rejection over Toyo is believed addressed and overcome by the amendment.

Claims 1-12 stand rejected under 35 U.S.C. 103(a) said to be unpatentable over Lausberg et al (U.S. Patent 5,331,044).

Lausberg's TPU composition contains elastomeric components that differ in terms of their hardness. Included among the auxiliaries and additives that are optionally incorporated in the referenced composition are conventional release and demold agents such as stearyl alcohol and stearic acid amide. These are well-known and routinely used release agents for TPU compositions. As evidenced by the enclosed declaration by Dr. Chan, stearic acid amide was in fact incorporated in the exemplified TPU compositions reported in the present application.

No indication is provided by Lausberg that these known mold release agents are anything but equivalent in terms of their known utility in the context of TPU. Lausberg includes nothing to suggest that these materials are critically different one from the other in terms of their contribution to the preparation of bloom-free TPU's. Therefore, the findings giving rise to the present invention – application page 7- are indeed surprising and unexpected. Attention is respectfully directed to that stearyl alcohol imparts to TPU virtual freedom from blooming whereas corresponding compositions that contain only stearic acid amide exhibit heavy blooming. Lausberg cannot reasonably be said to render obvious the presently claimed invention and the rejection based thereon is requested to be retracted.

Believing the above represents a complete response to the Office Action and that the application is in condition for allowance, applicants request the earliest issuance of an indication to this effect.

Respectfully submitted,

By



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JUL 30 2002

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VERSION WITH MARKINGS TO SHOW CHANGES MADE:

IN THE CLAIMS:

Please amend Claim 1 as follows:

1. (Amended) A method for making a bloom-free thermoplastic polyurethane comprising blending an amount of a chain terminator selected from the group consisting of monofunctional alkylene alcohol having at least 14 carbon atoms [.] and mono-isocyanate [and mono-amine] , in [a] molten thermoplastic polyurethane, said polyurethane being the product of a reaction wherein reactants comprise
- (i) at least one hydroxy functional polyol selected from the group consisting of polyester polyol, polyether polyol and polycarbonate polyol, having a number average molecular weight of 500 to 5000 and a hydroxyl functionality of at least 2,
 - (ii) a chain extending compound selected from the group consisting of diols and diamines having a molecular weight of 60 to 500 g/mol,
 - (iii) an organic diisocyanate,
- wherein said (i), (ii) and (iii) are present in the reaction in such amounts that the ratio NCO/H therebetween is 0.95 to 1.05, said amount of chain terminator being sufficient to render said product bloom-free.

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